

NASA TECH BRIEF

Marshall Space Flight Center



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

Aluminum Alloys With Improved Strength

The mechanical strength and stress corrosion behavior of two new Al-Mg-Zn alloys have been studied and compared with those of 7075 aluminum alloy. These are BAR and 7050 alloys that include Zn instead of Cr. The results are published in a report. Since 7075 alloy is widely used, it is expected that the similar, but improved, properties of the Al-Mg-Zn alloy will suggest numerous applications.

One important feature observed with the new alloys is their improved mechanical strength in comparison with 7075. This added strength is attributed to a finer grain size which for the new alloys is from 5 to 8 μm as opposed to from 95 to 175 μm for alloy 7075.

The reduced grain size increases susceptibility to stress corrosion attack. Crack propagation time in the new alloys is reduced due to the smaller grain boundary precipitate spacing. Overall resistance to stress corrosion attack is greatest for the 7075 and 7050 alloys. However, this depends on the temper of the alloy, as some tempers are found to be less resistant.

Note:

Requests for further information may be made in writing to:

Technology Utilization Officer
Marshall Space Flight Center
Code AT01
Marshall Space Flight Center, Alabama 35812
Reference: B75-10200

Patent status:

NASA has decided not to apply for a patent.

Source: R. DeIasi and P. Adler of
Grumman Aerospace Corp.
(MFS-23239)

Categories: 04 (Materials)
06 (Mechanics)